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## POLYEMBRYONY IN THE NINE-BANDED ARMADILLO.

Newman (Am. Nat., Sept. 1913) brings together many interesting facts concerning the biology of the Texas Armadillo, gathered from numerous papers which he has published previously. Since the paper is itself a summary, it is impossible here to summarize it.

Some of the most interesting facts relate to polyembryony. There are four embryos, which are enclosed in a common chorion. These four are always of the same sex. They are formed from a single egg fertilized by a single spermatozoon. The cleavage gives rise to an inner cell mass and blastodermic vesicle similar in all essential respects to the rodents. It is in connection with mesoderm formation that the writer finds first two, and then four, buds within the general vesicle. The writer believes that this breaking up of embryonic activity, which might naturally be expected to continue as a unit, may be caused by lowered vitality, due to an egg parasite, coupled with an external pressure on the developing embryo exerted by a groove in the uterine wall. The latter tends though pressure to isolate the two halves of the embryo, and because of the low vitality it is not able to unify these bilateral growth activities.

Many interesting questions concerning heredity, sex-determination, and the like, offer themselves in connection with this very favorable material. For example, it is clear that these four embryos are much closer in kinship than is true of members of the same litter in mammals generally. Furthermore they occur in pairs which are mutually more alike than they are like the other pairs.

Each embryo ultimately develops its own independent connection with the mother, and they often differ signally in their nourishment, as shown by the rate of development. Since the quadruplets are invariably of the same sex, irrespective of their size, it is clear that the sex is determined before the isolation of the four centers of growth in the vesicle.

The female diploid number of chromosomes is 32, reducing to 16. In the male the diploid is 31, reducing to 15 and 16. This duplicates the conditions described in other vertebrates.

The same author (Jour. Exp. Zool., Aug., 1913) discusses in a much more extended way the many interesting questions of heredity suggested in the more general article.

#### PERSISTENCE OF BACILLUS ABORTIVUS IN TISSUES.

Fabyan (Jour. Med. Research, May, 1913) presents facts to show that *B. abortivus* has a quite prolonged life in the tissues of apparently healthy laboratory animals—as guinea pig, rabbit, mouse, rat, pigeon, etc. In one instance they were harbored without any external signs of ill effects for 67 weeks. Two additional conclusions seem warranted from the experiments: First, that there seems to be at least a slight temporary multiplication of the germs after inoculation; and, second, that the animals are not without the power slowly to destroy the bacilli.

The study is interesting as bearing on possible periods of endurance and latency of pathogenic bacteria after the disappearance of the symptoms of the disease.

#### PERSISTENCE OF TUBERCLE BACILLI IN CULTURES

Smith (Jour. Med. Res., May, 1913) tests the current view that tubercle bacilli lose their vitality in cultures in periods of 1 to 6 months. He found that cultures which completely ceased to multiply on the artificial media under wholly favorable conditions were still infectious to guinea-pigs for from 7-19 months. This was true both of human and bovine strains; though of the two types when reared side by side the bovine is the more resistant. It is true that the number of bacilli surviving in such cultures is very small. The series of biological facts is suggestive: Tubercle bacilli (bovine), which on removal from the diseased animal do not at first multiply on glycerine agar, may in time become partially saprophytized and grow luxuriantly on such culture media; gradually this culture medium fails to serve their purpose, and most of them die; as long as vitality lasts the fresh tissues of the guinea-pig furnish an adequate medium for their restoration.

#### CAMBIUM GROWTH IN AMERICAN LARCH

Knudson (Bul. Tor. Bot. Club, June, 1913) presents a study of the American larch in respect to place and time of beginning of